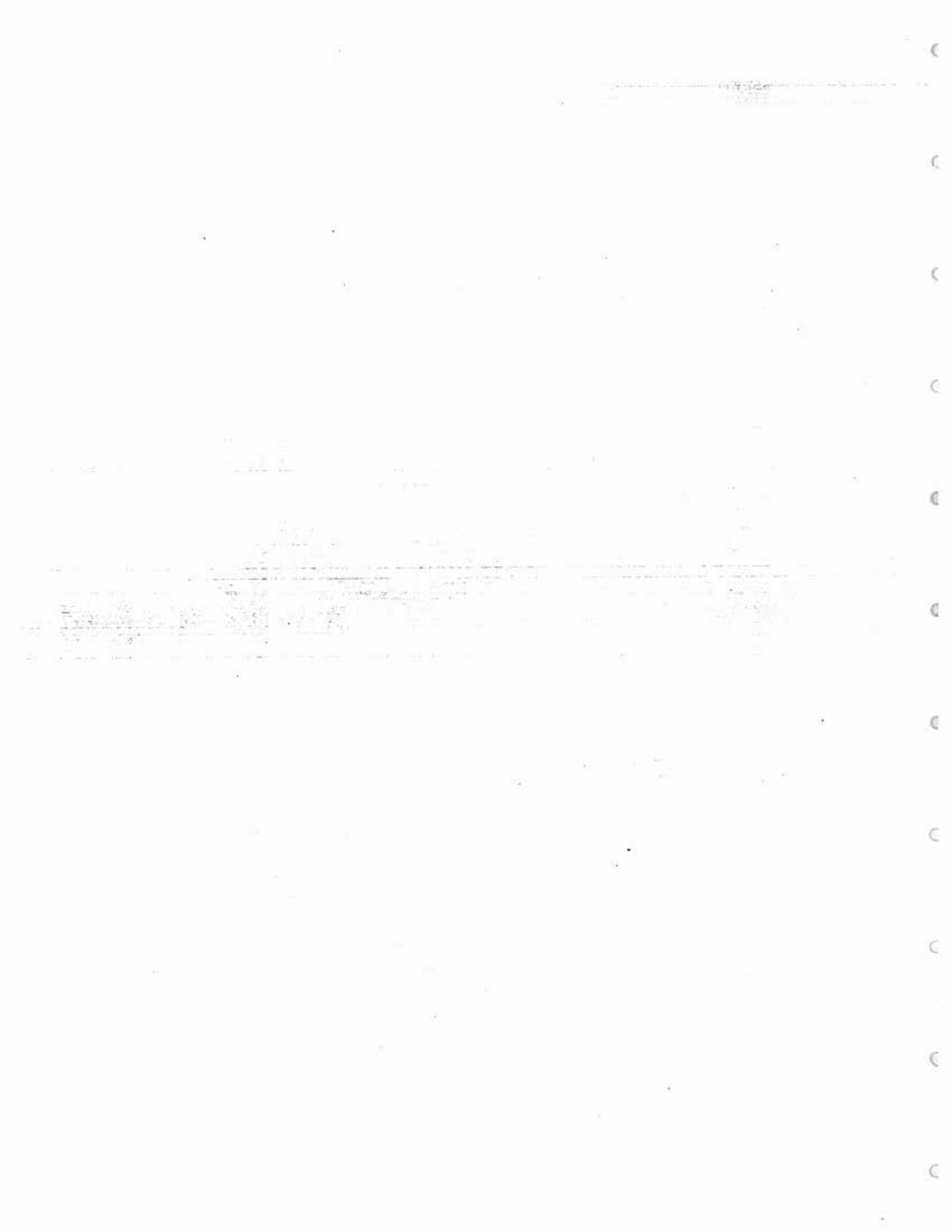


## **Naval Medical Research and Development Command**



**National Naval Medical Center  
8901 Wisconsin Avenue  
Building 1, tower 12  
Bethesda, MD 20889-5606**



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## COMMANDING OFFICER

### Captain Edward T. Flynn, Jr., MC, USN

Captain Flynn was born in Hartford, CT, on 18 September 1941. He received a B.S. degree from Trinity College in Hartford, CT, in 1963, and received his Doctor of Medicine degree from the University of Pennsylvania in Philadelphia, PA in 1967. Captain Flynn entered the U.S. Navy in May 1967. After serving a rotating internship at the National Naval Medical Center in Bethesda, MD from 1967 to 1968, he completed six months of diving and submarine medicine training at the Naval Submarine Medical Center in Groton, CT. In 1969, Captain Flynn was designated a Qualified Submarine Medical Officer.

From 1969 to 1974, Captain Flynn served two tours of duty as a Undersea Research Medical Officer at the Navy Experimental Diving Unit in Washington, DC, and a two year post-doctoral fellowship in Hyperbaric Medicine and Respiratory Physiology at the State University of New York at Buffalo. During this period he was instrumental in developing innovative decompression procedures and thermal limits for deep diving. He served as an experimental subject on a 600 foot saturation dive and was the on-scene medical officer for a world record-breaking saturation dive to 850 feet off the coast of CA.

In 1975, Captain Flynn reported to the Naval School, Diving and Salvage, Washington, DC, as the Senior Medical Officer. During his tour, he introduced extensive changes in the medical officer curriculum and authored a 970 page Diving Medical Officer Student Guide which continues as the textbook used today.

Following completion of an anesthesia residency at the National Naval Medical Center in 1978, Captain Flynn reported to the Naval Medical Research Institute for duty as an Undersea Research Medical Officer. In 1981, he was appointed Head of the Physiology Division at the Naval Research Institute and in 1984, was named Head of the Diving Medicine Department. For the next five years, Captain Flynn organized and directed major medical research programs in support of Fleet and Naval Special Warfare diving operations. In 1990, Captain Flynn was appointed as the Naval Medical Research Institute's Chair of Science.

Captain Flynn is a Diplomate of the American Board of Medical Examiners and the American Board of Anesthesiology. He serves on two NASA Advisory panels dealing with space medicine as well as the Joint Advisory Committee on Clinical Hyperbaric Medicine. He is the author or co-author of 80 professional publications. His military decorations include the Legion of Merit, the Meritorious Service Medal with Gold Star, the Navy Unit Commendation, the Meritorious Unit Commendation with Bronze Star, and the National Defense Service Medal with Bronze Star.

Captain Flynn is married to the former Janet-Beth McCann of Philadelphia, PA. They have one daughter, Erin. The Flynn's make their home in Great Falls, VA.

### Previous Commanding Officers

Previous Commanding Officers	
CAPT C.E. Brodine, MC, USN	1974 - 1977
CAPT J.D. Bloom, MC, USN	1977 - 1980
CAPT J.F. Kelly, DC, USN	1980 - 1985
CAPT W.M. Houk, MC, USN	1985 - 1988
CAPT J.N. Woody, MC, USN	1988 - 1991
CAPT E.T. Flynn, MC, USN	1991 -

## BACKGROUND

Medical research has been an integral part of the U.S. Navy for as long as medical personnel have embarked on Naval vessels. Until World War II, medical research was primarily the result of the initiative and creativity of individual medical officers. However, the massive efforts expended during World War II completely changed the way research and development was viewed by the Navy. Research was recognized as an important component of the Navy's ability to meet future needs. Also recognized was the necessity for a coherent organization to effectively manage the resources devoted to research and carry out the programs needed by the operating forces. Navy Medicine was no exception to this process.

During World War II and the subsequent years, vital medical research programs were developed in a number of Navy Medical in-house laboratories. The management of these programs was accomplished by the Research Division of the Bureau of Medicine and Surgery (BUMED). By 1974, the medical research programs supported by BUMED had grown to such stature and complexity that the Naval Medical Research and Development Command was established as an Echelon III headquarters activity to exercise full oversight responsibilities for Navy Medical Research, Development, Test, and Evaluation (RDT&E) work.

Current medical research and development efforts are directly linked to the requirements for Medical Department support of the Operational Navy and Fleet Marine Forces, with an emphasis on readiness and sustainability. In a conventional medical sense, responsibilities range from diagnosis, prevention, and treatment of diseases to enhance sailor's and Marine's fighting capability in any environment.

Such a broad range of responsibilities requires a careful application of scarce resources in order to solve the problems being generated by the global commitments of our operational forces, now and in the future. To meet this challenge, the Naval Medical Research and Development Command oversees an interdisciplinary in-house team of 1300 military and civilian members representing over fifty scientific, engineering, and technical occupational specialties, located in eleven field activities in the United States and foreign countries. In addition, the Naval Medical Research and Development Command maintains a contract research program, works closely with the U.S. Army, the U.S. Air Force and other Federal agencies; and collaborates fully with private industry to encourage an interest in supporting and developing products to meet Navy and Marine Corps operational requirements.

Major Research Program Areas	
Combat Casualty Care	Submarine and Diving Medicine
Aviation Medicine and Human Performance	Infectious Diseases
Fleet Occupational Health	Combat Dentistry

Within each of these categories of research, the Naval Medical Research and Development Command endeavors to provide support in the areas of surface, undersea, and amphibious assault, as well as special operations missions.



## **MAJOR RESEARCH PROGRAM AREAS**

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### **Combat Casualty Care**

The Combat Casualty Care Program, Naval Medical Research and Development Command's largest research program, focuses on operational readiness, mission effectiveness, and medical support for deployed combat forces. Timely and effective treatment for combat trauma is essential for optimal return to duty of personnel, overall mission effectiveness, and elimination or reduction of injury complications. Medical complications from severe hemorrhage, wound contamination, shock lung, septic shock, severe burns, radiation exposures, non-freezing cold injuries, immersion hypothermia, and injuries due to chemical and biological warfare agents are the focus of innovative research and development efforts.

### **Infectious Disease**

Because sailors and Marines are deployed around the world, Navy laboratories in the United States and overseas are constantly assessing infectious diseases that could threaten military operations. The Infectious Disease Program includes basic and applied studies related to the prevention, diagnosis, and treatment of military relevant infectious diseases. Basic research in microbiology, immunology, pathogenesis, disease prevention, and vector transmission provides insight into developing prevention and treatment measures. Applied studies focus on the development and testing of vaccines, prophylactic and therapeutic drugs, as well as the development of rapid identification and diagnostic methods and equipment.

### **Diving and Submarine Medicine**

The Diving and Submarine Medicine Program focuses on the safety and readiness of Navy divers and submariners. The Navy's diving research program represents a unique center of expertise that investigates a wide range of medical and physiological problems related to diving. Research efforts are related to submarine rescue, deep water recovery, underwater construction, special forces operations, explosive ordnance disposal and other underwater applications. The extraordinary working environment of a submarine is the focus of researchers who evaluate the environmental controls and occupational medical aspects of submarine operations. The major efforts include sonarman performance, medical qualifications for submarine duty and improved crew health and safety.

### **Fleet Occupational Health**

The Fleet Occupational Health Program studies the physiological and biological impact of Navy systems and technologies. The program focuses primarily on two areas, the assessment of biomedical risk and the development of safe exposure criteria. Researchers evaluate exposure to Navy-specified hazardous materials which results in recommendations of health standards. Medical factors that limit performance are studied to assess and minimize the effects of operational and environmental stressors on health and safety. Another focus of research is objective hearing assessment methods and novel techniques for hearing protection.

### **Aerospace Medicine and Human Performance**

The Aerospace Medicine and Human Performance Program concentrates on the interaction between military personnel and their diverse working environments. Current studies include evaluating various biomedical interventions to enhance performance during sustained and continuous combat operations. Also, current studies parallel research being done by the Navy's warfare technology laboratories. Complex, high-tech Navy defense systems are creating more physically and intellectually demanding work environments and Navy researchers are assessing the medical requirements of these systems in order to provide support for the designers and ultimately to the people who will use them.

## **Combat Dentistry**

The Military Oral Health Research Program focuses on the dental and oral health problems of sailors and Marines and the dental problems of operational deployments. Areas of research cover preventive dentistry, dental caries, periodontal disease, oral microbiology, oral surgery and physiology, and equipment development and evaluation. To maximize dental wellness researchers recommend treatments to Navy dentists that have the highest rate of long-term clinical success and provide monitoring schemes to track the dental wellness of the active duty Navy and Marine Corps personnel.

## **EXAMPLES OF SCIENTIFIC ACCOMPLISHMENTS IN 1992**

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### **New Labeling Technique For Stem Cell Replacement Therapy**

Stem cell therapy is the main stay of successful bone marrow transplantation. However, it has been difficult to grow stem cells in culture and to prove that functional blood cells collected from patients actually derived from therapeutically infused stem cells. Researchers from the Immune Cell Biology Department at the Naval Medical Research Institute, Bethesda, MD, developed a new method that combines the use of two bone marrow growth factors, Stem Cell Factor and G-CSF (granulocyte colony stimulating factor), and interleukin-3, a cytokine, to stimulate the division of isolated stem cells from rhesus monkeys. Cell labeling was done with a retrovirus containing a gene for resistance to the antibiotic, neomycin. Studies showed that the lethally irradiated rhesus monkeys recovered with culture grown labeled stem cells (CD34+ cells). The normal levels of new red blood cells, white blood cells and platelets occurred as early as two weeks post-irradiation/ therapeutic transfusion with CD34+ cells. All cells were derived from CD34+ cells because all white blood cells were resistant to neomycin. Human stem cell replacement therapy trials will commence shortly at NIH. This therapy has the potential to save the lives of countless military casualties if future conflicts include the use of chemical or radiological weapons. In the civilian sector, this new technique for manipulating stem cells will help advance blood cell reconstitution therapies for cancer patients. The novel method of growing stem cells in culture will allow the therapeutic replacement of the patient's own stem cells, decreasing the risk of transplantation rejection as well as the risk of infection from non-self stem cell donors.

### **Assessment Of High Intensity Laser Exposures**

NMRDC sponsored researchers at the Naval Air Development Center, Warminster, PA, designed and fabricated an enlarged (X14), scaled artificial eye to assess the effects of high intensity glare on visual performance. The artificial eye which is interfaced with a high resolution color image processor, is comprised of a dual lens system, variable aperture, and scaled anterior and posterior chambers. The artificial eye allows researchers to vary, with known degrees of freedom, parameters of the human eye such as the refractive power of the cornea and lens, lenticular and corneal transmittance, pupil size, as well as the fluids filling the chambers. Current research is calibrating and validating the artificial eye against human data over a safe range of glare intensities. Studies to date demonstrate that the glare spread function in the artificial eye closely approximates the human glare spread function observed with emmetropic and ametropic observers. Future studies will assess the transient effects associated with damaging glare intensities in addition to evaluating high risk agile laser eye protection.



## Trypsin Detection And Quantitation Using The Bapna-in-agar-gel

Researchers at the Naval Dental Research Institute, Great Lakes, Ill, developed a quantitative assay for measuring trypsin and trypsin-like enzyme activities using N- $\alpha$ -benzoyl-DL-arginine-p-nitroanilide (BAPNA). Both cultured oral microorganisms and human subgingival plaque can be screened and evaluated for trypsin activity. Thus far, use of the BAPNA-in-Agar system has revealed a positive reaction by trypsin and several Gram-negative oral microorganisms associated with adult periodontal diseases. Applied clinically, the test will help identify patients undergoing changes in disease status and will be useful in monitoring the success of therapeutic measures. Exploratory tests with subgingival plaque samples indicate the BAPNA-in-Agar system can serve as a rapid, simple method for detecting microbial trypsin-like activity.

## FDA Licensure Sought For Extended Storage Of Several Frozen Blood Products

Blood products for the resuscitation of severely injured combat casualties are essential for emergency medical care. The logistical difficulties of providing fresh blood products in the initial days to weeks of a military conflict are overwhelming. The alternative to fresh blood products is the appropriate storage and utilization of frozen blood products. NMRDC funded researchers at the Naval Blood Research Laboratory, Boston University School of Medicine, are working with the Blood Bank at the National Naval Medical Center, Bethesda, MD to prepare data for FDA licensure to extend the storage of several frozen blood products. This includes data to support extended storage of fresh frozen plasma and cryoprecipitate at  $-80^{\circ}\text{C}$  for at least 3 years (current FDA regulations allow for the storage of fresh frozen plasma and cryoprecipitate for one year at  $-20^{\circ}\text{C}$ ); storage of frozen single-donor apheresed platelets with 6% DMSO at  $-80^{\circ}\text{C}$  for two years (the FDA has approved DMSO as a cryoprotectant for platelets); expanded post-thaw storage of deglycerolized red blood cells in a sodium chloride-glucose solution at  $4^{\circ}\text{C}$  for 7 days and in Optisol, ADSOL or Nutricel solutions at  $4^{\circ}\text{C}$  for 14 days. Another work effort that is part of the above projects is the development of a post thaw red blood cell wash system which is completely closed to the environment. Also, in 1992 the Naval Blood Research Laboratory will begin to assay solutions made by the Resuscitation Fluid Production System (REFLUPS) and to provide data to support FDA licensure.

## NMRI's Enteric Disease Program Transitions Prototype Campylobacter Vaccine Into Advanced Stages Of Development

Campylobacter jejuni is recognized worldwide as a major bacterial cause of enteric disease and is the second most common cause of bacterial diarrheas in the developing world, accounting for an estimated 400,000,000 cases annually. In the U.S. campylobacter isolations are more frequent than Salmonella and Shigella isolations combined. Researchers in the Campylobacter Research Program at the Naval Medical Research Institute (NMRI), Bethesda, MD, have developed two classes of oral vaccine candidates. One is a stable, live flagellar mutant which immunizes against wild type organisms without colonizing long enough to initiate disease. The second and most advanced, is a killed whole cell preparation with the immunogenicity enhanced by a prototype oral adjuvant. The adjuvant used in this vaccine candidate is also a Navy (ONR) developed product and its utilization in this first generation campylobacter vaccine represents a new concept in enteric vaccine development. In a variety of animal models, the killed whole cell vaccine has no significant side-effects, is highly immunogenic and capable of stimulating protective levels of immunity comparable to that achieved following infection with live organisms. This vaccine may be available for phase I and II safety and immunogenicity testing in human volunteers during early FY93.

## Researchers Developing Frequency Agile Laser Eye Protection For Aircrew Personnel

Current laser eye protection protects against one, or several discrete wavelengths of laser radiation. Lasers presently under development will have the capability for either preset or frequency adjustment during operation. These "agile" lasers require a conceptually different type of eye protection. In 1986 a multi-service, multi-disciplinary team of experts brought together by the Vision Laboratory of the Naval Air Development Center, Warminster, PA, and funded in part by NMRDC, began investigating various nonlinear optical materials. This group has been working to develop new technologies to ensure that eyes will not be damaged and vision will not be disrupted when aircrew personnel are irradiated by a frequency agile laser. To be effective the new eye protection system must respond across the visible spectrum, activate in less than a nanosecond, remain in the closed state until cessation of radiation, have a minimum unactivated state transmittance of 75%, and be able to withstand high peak incident powers. Presently, three technology demonstrators are being fabricated based on liquid suspension and liquid crystal technologies. Recent field tests conclusively demonstrated that the liquid suspension cell functions well in the presence of atmospheric scintillation which can cause significant restructuring of the power profile of the incident laser. Testing is underway to begin transition of the most promising technologies in addition to pursuing five additional technologies.

## NMRI Researchers Investigate A New Class Of E. Coli

Globally deployed troops are naturally exposed to local agents of disease and during wartime military units may be subjected to biological warfare attack with toxin-producing microorganisms. Identifying new agents of infectious disease, along with their epidemiology and mechanisms of pathogenesis, is critically important to the Navy. Researchers in the Enteric Diseases Program, Naval Medical Research Institute, Bethesda, MD, are investigating the disease-causing potential of a newly recognized group of intestinal microorganisms, the enteroaggregative *Escherichia coli*. The investigators have successfully identified and cloned two genes from these organisms which are suspected to be the genetic basis of the microbe's disease-causing ability. One, termed the *astA* gene, is responsible for the elaboration of a novel toxin, EAST-1. The other, the *aggA* gene, allows the bacteria to adhere to cells lining the intestine. These genes are being incorporated into DNA probes, which will be used as a rapid and sensitive detection method to determine the role of enteroaggregative *E. coli* in causing traveller's diarrhea worldwide.

## Disease Threat Assessment Of Japanese Encephalitis In Okinawa

Japanese encephalitis, a viral infection of the brain with a very high rate of morbidity and mortality, is found throughout the Far East. Military personnel, their dependents and civilians living and working in Japan, China, the Philippines, Southeast Asia, and parts of Indonesia are at risk of getting the disease. Researchers from the U.S. Naval Medical Research Unit No. Two in Jakarta, Indonesia are working with investigators from the Navy Environmental Health Center, and the Navy Environmental and Preventive Medicine Unit No. Six to assist the U.S. Naval Hospital, Okinawa in an ongoing effort to obtain approval and licensure from the FDA for a vaccine developed and produced in Japan. In the largest controlled study of a vaccine undertaken by the Navy, Naval Hospital personnel are collecting mosquitos and counting vectors in training and housing areas, and estimating the risk to people in areas scattered around the central part of Okinawa. All active duty members, dependents and civilians who are at risk can elect to be vaccinated under a research protocol approved by the FDA and the CDC. The data obtained in this study will contribute to the approval process by the FDA and provide a scientific basis for policy decisions made by the Navy, Marine Corps, Army, and Air Force on the use of the vaccine for DoD personnel and dependents assigned to bases in the Far East.

## **NHRC Develops An Automated Alertness Monitoring System**

Sonar, radar, and air traffic control operators; pilots; and long-haul drivers, often need to remain alert during long periods in which little or no new information is received. Many studies have shown that under these circumstances operator vigilance tends to decline after only a few minutes on the job. Researchers in the Department of Cognitive Performance and Psychophysiology, Naval Health Research Center (NHRC), San Diego, CA, have demonstrated that this decline is actually made up of wide-ranging fluctuations in alertness over seconds and minutes, which could result in delayed or absent responses to important events. New studies have shown that fluctuations in alertness can be detected by computer analysis of brain electroencephalogram (EEG) patterns. NHRC scientists have developed an Alertness Monitoring System which will be demonstrated for the first time during the Spring of 1992. The demonstration will include the use of individualized neural net software to deliver real time feedback to the operator when alertness levels drop. Once implemented, the system could improve both operator and total system performance and save operating costs by reducing the need for redundant staffing. Potential applications include sonar, radar and air traffic control; air and land vehicle operation, and plant engineering.

## **NAMRL Researchers Produce a Miniature Ear-canal Radar Detector**

Physical constraints and mission scenarios do not allow conventional electronic warfare countermeasures equipment to be placed aboard the special boats used by Navy Special Warfare (NSW) personnel. Boat crews, however, have an urgent need to know if they are being scanned by hostile radar. Any practical solution would have to be rugged, lightweight, and not interfere with crew tasks. Researchers in the Bioengineering Division, Naval Aerospace Medical Research Laboratory, Pensacola, FL, may have found an answer to this problem in the electronic modification of a miniaturized hearing aid. With the microphone removed and a sensitive detector circuit installed, one prototype device showed sensitivity to a wide spectrum of modulated radiofrequency (RF) energy, from 2.0 MHz to 22 GHz, and could detect a weather radar at a distance of seven nautical miles. A refined version of this device could enhance the operational capability of NSW forces; furthermore, a smaller, less sensitive version has potential application in the private sector as an early-warning device for workers who might be occupationally exposed to RF energy.

## **Effect Of Mission Tasking On Work/Rest Schedules And Subjective Readiness Of Naval Aviators**

Among the major concerns in naval aviation are the effects of sustained flight operations on aircrew readiness and performance. Around-the-clock flight operations can lead to fatigue, stress, reduced sleep, poor sleep quality, performance degradation, and even circadian desynchronization (a disruption in the normal daily variations in a variety of physiological functions and behaviors). Researchers in the Aviation Performance Division of the Naval Aerospace Medical Research Laboratory, Pensacola, FL, participated in deployments on the USS AMERICA (CV-66) to the Red Sea during Operations Desert Shield/Storm and more recently on the USS SARATOGA (CV-60) during a fleet exercise. They collected data from a wide variety of aviators on work/rest schedules, subjective readiness to conduct an air strike, landing signal officer grades, and mission tasking. The USS SARATOGA (CV-60) study included the collection of cognitive performance data pre- and post-flight from S-3 Viking and F/A-18 Hornet aviators. This information will enable an examination of the effects of mission tasking on work/rest cycles, performance, and subjective readiness. This unique study should prove of considerable value to airwing commanders, squadron skippers, flight surgeons, and others committed to preserving and maximizing aircrew performance.



## **NDRI-DET Bethesda Developing Non-invasive Methods of Screening For Dental Disease**

Identifying personnel at risk of developing debilitating dental disease is a major goal of dental research in the Navy. Current studies are focusing on developing and testing non-invasive methods of screening for the most costly diseases that dentists treat — caries, cracked tooth syndrome, and periodontal disease. Several physical and biological approaches are being pursued by investigators at the Naval Dental Research Institute Detachment at the Naval Dental School, Bethesda, MD. Future dental evaluation techniques will use ultrasonic imaging of the teeth for cracks and caries, and of the supporting periodontal structures for non-invasive measurement of disease progression. In addition, new dental approaches being studied include the evaluation of caries screening tests; the evaluation of periodontal disease indicators using gingival crevicular fluid; and identifying the mediators of chronic inflammatory disease related to polyclonal B-cell activators, T-cell superantigens, and periodontopathogens. Reducing the overall treatment needs through maximizing the dental health of military personnel is a clear objective for aiding operational readiness.

## **NMRI And NSMRL Design A Computer Model To Predict The Onset Of Decompression Sickness**

Diving medical scientists at the Naval Medical Research Institute, Bethesda, MD and the Naval Submarine Medical Research Laboratory, Groton, CT developed and tested a real-time probabilistic-based computer algorithm and operating system that accurately predicts the incidence and time of onset of decompression sickness (the Bends) for Navy divers for any nitrogen-oxygen breathing gas mixture. The advanced computer system generates decompression schedules for single dives to a single depth, repetitive dives to a single depth, single multi-level dives, and repetitive multi-level dives. The model can be used to compute tables to suit any level of operational risk from extremely safe sport or training dives to riskier dives where the military stakes are higher. Further development is planned to modify the model for use in a diver's wrist-borne underwater decompression meter. The decompression meter will calculate the risk of the Bends every few seconds, using a probability formula into which the relevant factors of the dive are programmed. The process views the whole dive as being composed of many moments of risk that all add up to the total risk. Over the next few months, this computer model will be used to produce the next generation of decompression schedules and procedures for Volume I of the US Navy Diving Manual. The revised schedules are based on plausible physiology and well-documented experience and will replace the existing schedules as the Navy standard.

## **Computer-based Performance Tests Developed By NAMRL Transition For Use In Aviation Training Selection**

Computer-based performance tests (CBPTs) developed at the Naval Aerospace Medical Research Laboratory (NAMRL), Pensacola, FL, facilitate the assessment of cognitive and psychomotor skills of potential Naval and Marine Corps aviators. Research indicates that the present rate of attrition from primary flight training would be reduced from 10% to 6% by including the CBPTs as an additional screening test. Given that the cost of training a single aviator can range from \$0.8 to 1.5 million, the reduced attrition represents a substantial savings to the Navy. Also, the CBPTs can predict student success/attrition further along in training than any instrument currently available. Representatives from the Chief of Naval Operations; the Chief of Naval Education and Training; the Chief of Naval Aviation Training; and the Commander, Naval Recruiting Command, reviewed the CBPTs to determine the advisability of transition to the Naval Aviation Schools Command. The group carefully examined the background and development of the CBPTs and decided the tests will significantly enhance the ability to predict the likelihood that an aviation candidate will successfully complete primary flight training. The CBPTs may ultimately prove useful in establishing pipeline assignment guidelines and in identifying weak students with low probabilities of successful advanced flight training completion. By October 1992, twenty-five computer-based work stations will be installed and made available for field testing at the Naval Aviation Schools Command. A comprehensive economic analysis regarding the costs and benefits of long-term implementation of the CBPTs will be conducted.

## **NMRI Researchers Devise A New Strategy For Vaccine Development**

Vaccines are the most cost effective method to control and prevent infectious diseases. However, in many cases standard technologies have failed to provide safe and effective vaccines for viral threats such as HIV or for malaria where there is increasing antimicrobial resistance of malaria parasites. Researchers in the Immune Cell Biology Program, Naval Medical Research Institute (NMRI), Bethesda, MD discovered the function of a novel class of receptors on T Cells that will lead to the development of a new technique for vaccine production. These studies focus on the ability of growth factors to reconstitute immune function and have provided insight into the development of novel immunosuppressants. The prototype of this new class of receptors is the CD28 molecule that functions by controlling interleukin-2 (IL-2) production by T cells. IL-2 is the principal factor required by T cells for growth. In a recent trial involving rhesus monkeys at NMRI, investigators found that monoclonal antibodies binding the CD28 receptor were able to potentiate responses to tetanus toxoid vaccine. Currently a trial in rhesus monkeys is in progress to determine if CD28 therapy can potentiate a vaccine response to HIV. Other projects underway at NMRI to study the CD28 pathway are designed to test whether this system might be involved in common autoimmune diseases such as diabetes mellitus, and whether CD28 therapy can accelerate the development of the immune and blood forming systems after bone marrow transplantation.

## **Measuring Blood Analytes Using Non-Invasive Technique**

Current methods of performing laboratory tests for the rapid evaluation of a critical care patient require analyzers, reagents, and the procurement of a blood specimen from the patient. Performing these tests in the field or operational environments is logistically very difficult. A NMRDC sponsored Small Business Innovation Research Project is developing a promising solution to this problem. Investigators of Biotronics Technologies, Inc., Waukesha, WI are working with researchers at the National Naval Medical Center (NNMC), Bethesda, MD in the development phase of an analyzer that will use infrared light reflectance from the skin to provide results for blood analytes. A study, conducted at NNMC on 250 subjects from whom infrared light spectra and correlating chemistry profiles were collected and compared, has provided data for the computer algorithms that will be used in the development of the final prototype analyzer. The analyzer, which will be of a portable size, will analyze infrared light spectra that is reflected from the patients skin to give results for sodium, potassium, chloride, carbon dioxide, glucose, hematocrit, and blood urea nitrogen. Upon completion, this project will provide the solution to overcome the difficulties of performing blood analyte levels in the field or in operational environments, and will allow rapid, non-invasive evaluation of patient status.

## **Researchers Investigate Replacement Tissue For Skin Grafting**

Open wounds and burns are a major problem in combat situations, frequently leading to infection and further complications, especially when large areas of the epidermal surface are burned or scarred. Future combat casualty care scenarios would have a field surgeon quickly and safely close the wound with cryogenically stored ready-to-use sterile sheets of epidermal cells attached to an underlying dermal equivalent. Navy sponsored researchers at Case Western Reserve University School of Medicine, Cleveland, OH are developing a skin-like tissue using keratinocytes, a basal lamina, and dermal fibroblasts as a replacement tissue for skin wounds. They are also investigating the technology for transferring genetic information into skin cells to enhance the therapeutic value for grafting and reduce rejection by the host immune system. In addition, researchers are planning to design DNA vectors that can carry biologically important genes into keratinocytes. The availability of such a set of vectors would potentially make it possible to express genes encoding antibiotics in the cells. This would render the cells resistant to bacterial infection, a further advantage in combat situations. The number of potentially useful genes that could be inserted into the cells with such a vector system is unlimited.



## NDRI Explores Non-Invasive Physiologic Monitors

The early detection of infection is essential to the safety of military personnel when faced with delayed medical evacuation. For personnel stationed in conditions of constant environmental stress (e.g. climatic extremes, undersea habitats, space evolutions, endemic disease) frequent monitoring of salivary chemistry may be a useful alternative to venipuncture. Salivary components which may provide early warning signals of physiologic compromise were evaluated by researchers in the Clinical Investigation Department at the Naval Dental Research Institute (NDRI), Great Lakes, IL in a collaborative study of acoustic stress effects in humans, at the Naval Submarine Medical Research Laboratory, Groton, CT. Salivary C-reactive protein (CRP) and cyclic AMP-dependent protein kinase regulatory subunits (cARP) showed changes associated with catecholamine release. CRP and cARP are indicators of inflammation and metabolic dysfunction, respectively. While it may be of forensic interest that the cARP protein banding patterns were unique to each subject (N=21), this evidence of pleiomorphism suggests that cARP may also have protein isoforms specific to diseases which trigger immune response. CRP, as an "acute phase" protein, may also show disease-specific pleiomorphism. Both cARP and CRP may respond to the immunologic stimuli of infection by showing genetically reprogrammed disease-specific protein isoforms. Such isoforms could provide monoclonal antibodies for early disease detection by salivary ELISA or Western Blot tests. NDRI has proposed expanded studies to explore these hypotheses.

## COMMAND STATUS

### Establishment

The Naval Medical Research and Development Command was established on 1 July 1974, in accordance with OPNAVNOTE 5450 of 7 June 1974, to provide for the management of Navy Medical Department research, development, test and evaluation programs under the purview of the Navy Medical Department.

### Mission

To plan, manage, and direct research, development, test, and evaluation (RDT&E) programs concerning the health, safety, and readiness of Navy and Marine Corps personnel in the effective performance of peace time and contingency missions, and to perform such other functions or tasks as directed in support of Fleet readiness.

### Command Relationships

The Navy Medical Research and Development Command is under the command of the Bureau of Medicine and Surgery and receives direct support from the National Naval Medical Center, Bethesda, MD. The Naval Medical Research and Development Command is subject to the area coordination of the Commandant, Naval District, Washington, DC.

Echelon of Command	
1.	Chief of Naval Operations
2.	Chief, Bureau of Medicine and Surgery
3.	Commanding Officer, Naval Medical Research and Development Command, Bethesda, Maryland
Host:	National Naval Medical Center, Bethesda, Maryland
Area Coordinator:	Commandant, Naval District Washington

## Component Activities

The following Echelon 4 and 5 Naval activities are assigned to the Naval Medical Research and Development Command for operation:

Naval Aerospace Medical Research Laboratory, Pensacola, FL  
Naval Biodynamics Laboratory, New Orleans, LA  
Naval Dental Research Institute, Great Lakes, IL  
    Naval Dental Research Institute Detachment, Bethesda, MD  
    Naval Dental Research Institute Detachment, San Antonio, TX  
Naval Health Research Center, San Diego, CA  
Naval Medical Research Institute, Bethesda, MD  
    Naval Medical Research Institute Detachment, Lima, Peru  
    Naval Medical Research Institute Toxicology Detachment, Wright-Patterson Air Force Base, OH  
Naval Submarine Medical Research Laboratory, Groton, CT  
U.S. Naval Medical Research Unit No. 2, Manila, Republic of the Philippines  
    U.S. Naval Medical Research Unit No. 2 Detachment, Jakarta, Indonesia  
U.S. Naval Medical Research Unit No. 3, Cairo, Arab Republic of Egypt

## Functions

As directed by the Chief, Bureau of Medicine and Surgery:

- a. Command the Navy Medical Department research and development laboratories and activities and support their RDT&E missions by providing personnel, funds, and facilities.
- b. Directs, plans, programs, budgets, and documents the Navy Medical Department RDT&E efforts in response to Navy and Marine Corps RDT&E requirements.
- c. Determines the requirements for and recommends the procurement, training, assignment and distribution of research and development personnel.
- d. Performs staff functions for and advises the Navy Surgeon General on RDT&E matters.
- e. Provides professional medical and dental guidance in the planning of Navy and Marine Corps weapons systems, life support systems, and personnel protection.
- f. Assigned, executes Medical Department responsibilities relating to the use and protection of human subjects utilized in RDT&E studies conducted by, within, or for the Department of the Navy.
- g. Provides veterinary animal use support to the Navy Medical Department as required.
- h. Coordinates research efforts with other Navy commands and offices, other government agencies, civilian organizations, and foreign governments.
- i. Provides and undertakes such other functions as may be authorized or directed by higher authority.

## COMMAND STAFFING

Manpower Authorization				
Officer	Enlisted	Civilian		
14	3	21		
Military Staffing				
	MC	MSC	DC	Other
Officers	2	3		
	E-9	E-5	E-4	E-2
Enlisted	1	1	1	1

## PERSONNEL AWARDS AND PROMOTIONS

### Civilian Personnel

#### Outstanding Performance Appraisals

Mr. Alvin Edwards	Ms. Teresa Coppolino	Ms. Allison O'Dell
Ms. Christine Eisemann	Ms. Doris Ryan	Ms. Kathy Kalivaeas
Ms. Mary Alice Tartler	Mr. Philip Cheng	Ms. Joan Speake-Ponow
Ms. Judith Hartig	Mr. Avron Spevack	Ms. Renee Singleton
Ms. Beth Harris	Ms. Vicky Crowder	Ms. Maureen Young
Ms. Deborah Pilkerton	Mr. Kip Johnson	

#### Awarded Quality Step Increase

Ms. Doris Ryan	Mr. Philip Cheng	Ms. Kathy Kalivaeas
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#### Awarded Cash Awards

Mr. Alvin Edwards	Ms. Teresa Coppolino	Ms. Allison O'Dell
Ms. Christine Eismann	Ms. Vicky Crowder	Ms. Mary Alice tartler
Mr. Kip Johnson	Ms. Judith Hartig	Mr. Avron Spevack

Ms. Renee Singleton

Ms. Beth Harris

Ms. Maureen Young

Ms. Deborah Pilkerton

Ms. Joan Speake-Ponow

### Military Personnel

CDR P.D. Kent, MC, USN

Meritorious Service Medal

LCDR C. P. Puksta, MSC, USN

Meritorious Service Medal

CAPT P.M. Curran, MSC, USN

Meritorious Service Medal

## SIGNIFICANT EVENTS IN 1992

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### January

06 Jan HM3 C. Rosario, USN reports for duty.

27 Jan CAPT Flynn attended FMF Medical Department Conference.

### February

03 Feb LCDR James R. Beddard, MSC, USN is promoted to CDR.

05 Feb CAPTAIN's Call held.

13 Feb Command personnel conducted research review at Naval Medical Research Institute.

18 Feb Medical Inspector General commenced Command Inspection.

27 Feb RADM Sanford (BUMED-IG) conducted ADM's Call for Command civilian personnel.

### March

03 Mar Medical Inspector General inspection is completed.

25 Mar Command Inspection of Naval Medical Research Unit No. Three.

### April

04 Apr HMI R. Stanga, USN, Naval Medical Research Institute awarded, Naval Medical Research and Development Command, Sailor of the Year.

08 Apr NAVMEDRSCHDEVCOM personnel attended Third Annual R&D Conference.

### May

05 May Basic Research Selection Panel held at Naval Medical Research Institute.

21 May Strategic Planning Working Group meeting held at Naval Medical Research Development Command.

30 May LT Thomas Dowty, MSC, USN departs on PCS orders.

## June

08 Jun CDR R. Oberst, MSC, USN departed the command on PCS orders.  
18 Jun Naval Medical Research Unit No. Three, Change of Command.

## July

01 Jul CAPT R. Carter, MSC, USN, reported for duty.

## August

30 Aug CAPT P. M. Curran, MSC, USN retires from active duty.

## October

02 Oct Naval Submarine Medical Research Laboratory, Change of Command.  
07 Oct Commanding Officers attended the Surgeon General's Conference.  
16 Oct Naval Aerospace Medical Research Laboratory, Change of Command.  
19 Oct Naval Medical Research and Development Command, Commanding Officer's Conference.  
23 Oct Naval Medical Research Institute 50th Anniversary.  
26 Oct Commanding Officer attended the ASBREM S&T Review.  
29 Oct Commanding Officer attended the Annual Armed Forces Epidemiology Board meeting at Parson's Island.

## December

29 Dec CAPT R. Gaugler, MSC, USN, departs on PCS orders.

## COMMAND FUNDED TRAVEL

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## January

02 Jan CDR R. Oberst visited Naval Medical Research Institute Detachment, Lima, Peru.  
06 Jan CAPT E. Flynn conducted site visits to Naval Medical Research Unit-3, Cairo, ASU Bahrain, and Porton Down, London for debriefing.  
21 Jan Mr. K. Johnson visited Naval Aerospace Medical Research Laboratory to conduct safety inspection.  
22 Jan CAPT R. Chaput conducted a JAGMAN investigation at Naval Medical Research Unit Three No., Cairo, EG.  
22 Jan CAPT R. Carter attended the review of Information Display Proposals in Boston, MA.



## February

- 09 Feb CDR T. Singer attended the Computer-Based Performance Test Implementation Planning meeting, Pensacola, FL.
- 23 Feb CDR J. Beddard visited Phoenix NBCD School, Portsmouth UK to discuss joint US/UK chemical biological defense programs.

## March

- 24 Mar CDR J. Beddard conducted program review at Naval Medical Research Institute Toxicology Detachment.
- 25 Mar Command Inspection Team visited Naval Medical Research Unit No. Three.

## April

- 27 Apr CDR T. Singer participated in 7th Annual Joint Service Night Vision Conference, NAS Oceana, VA.

## May

- 08 May CAPT P. Curran attended Centennial Convention American Psychological Association, Washington, DC.
- 13 May CAPT E. Flynn, CDR J. Beddard, and CDR R. Oberst attended the Armed Forces Epidemiological Board meeting, Norfolk, VA.
- 14 May CDR J. Beddard attended the Annual Environmental Health Center Workshop, Virginia Bch., Va.
- 14 May CDR T. Singer attended the annual Aerospace Medical Association meeting, Miami, FL.
- 17 May CDR J. Beddard conducted EMR Program review at Naval Aerospace Medical Research Laboratory.
- 17 May CAPT R. Chaput visited Brooks AFB, Naval Biodynamics Laboratory and Naval Aerospace Medical Research Laboratory to conduct program reviews.

## June

- 01 Jun Mr. K. Johnson visited Naval Health Research Center to conduct safety inspection.
- 07 Jun CDR T. Singer visited Naval Aerospace Medical Research Laboratory.
- 08 Jun HMCM K. Pedersen attended Naval District Washington, Command Master Chief Symposium.
- 11 Jun CAPT E. Flynn visited Naval Medical Research Unit Three, Cairo, EG; Naval Medical Research Unit Two, Jakarta, ID; Denpasar, Bali; and Singapore to conduct site visits for BUMED-02 and for changes of Command.
- 24 Jun Mr. A. Spevack attended the Cooperative Research and Development Agreement discussions in Atlanta, GA.

## July

- 12 Jul CDR F. Paleologo attended the Naval Research Advisory Committee Summer Study, Seattle, WA.

19 Jul Ms. M. A. Tartler attended the 23rd National Training Conference for Federally Employed Women, Cincinnati, OH.

## August

01 Aug LCOL G. Heisey Attended the American Veterinary Medical Association Conference, Boston, MA.

03 Aug CDR C. Schlagel visited Naval Health Research Center to conduct program review.

06 Aug CAPT M. Parsons visited Center for Disease Control to attend Hepatitis meeting.

11 Aug CDR B. Schibly conducted site visit of Naval Submarine Medical Research Laboratory.

16 Aug Command Inspection Team, conducted Command Inspection of the Naval Biodynamics Laboratory, New Orleans, LA.

## September

01 Sep CAPT R. Carter attended Naval Aerospace Medical Research Laboratory Planning Meeting, Pensacola, FL.

15 Sep Mr. K. Johnson conducted safety inspection at Naval Dental Research Institute, Great Lakes, IL.

15 Sep CDR B. Schibly attended Submarine briefing at Naval Submarine Medical Research Laboratory.

21 Sep CDR B. Schibly attended the ABCA-10 Dive meeting in Portsmouth, UK.

25 Sep CAPT R. Chaput visited Naval Blood Research Laboratory to assess REFLUPS program.

## October

26 Oct CDR J. Beddard attended the Armed Forces Epidemiological Board meeting, Norfolk, VA.

27 Oct CDR B. Schibly attended the Joint Advisory Committee on Clinical Hyperbaric Medicine, San Antonio, TX.

28 Oct CAPT E. Flynn, and CAPT M. Parsons attended the Armed Forces Epidemiological Board meeting, Chesterton, MD.

28 Oct LCOL G. Heisey attended the Annual Veterinarians Workshop, San Diego, CA.

## November

01 Nov Ms A. O'Dell attended the Federal Laboratory Consortium meeting, Phoenix, AR.

16 Nov CDR L. Yaffe and CDR P. Kent visited with Cryopharm Corp. supported principal investigator of research in Los Angeles, CA.

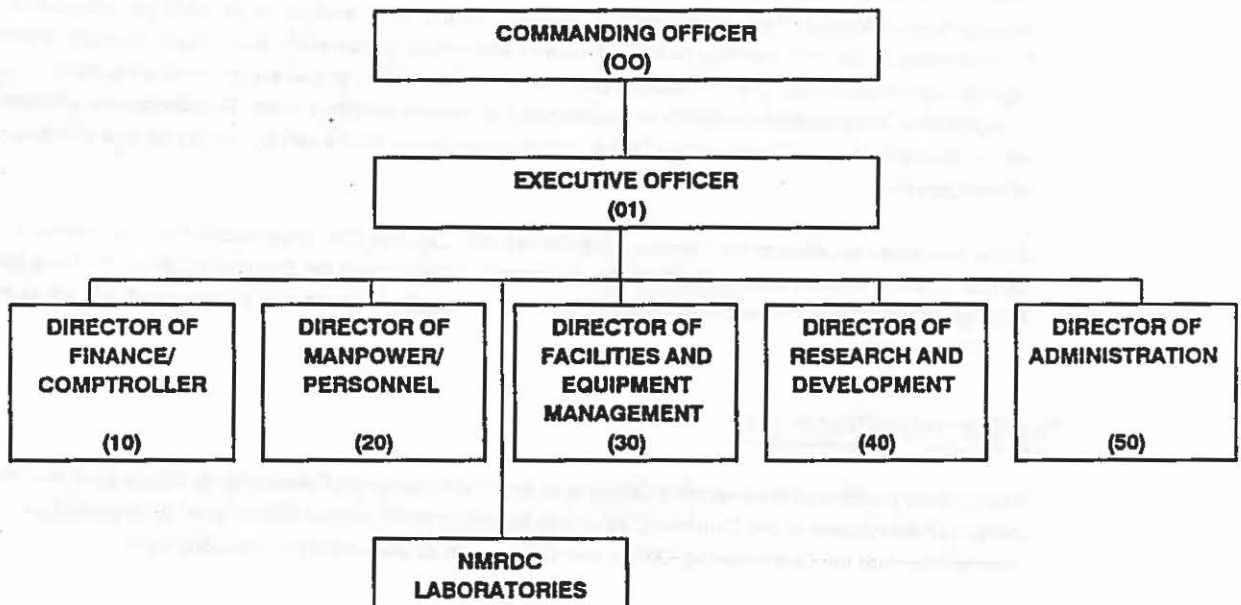
17 Nov CDR J. Beddard conducted program review at Naval Medical Research Institute Toxicology Detachment.

17 Nov HMCM K. Pedersen conducted site visit at Naval Dental Research Institute, Great Lakes, IL.

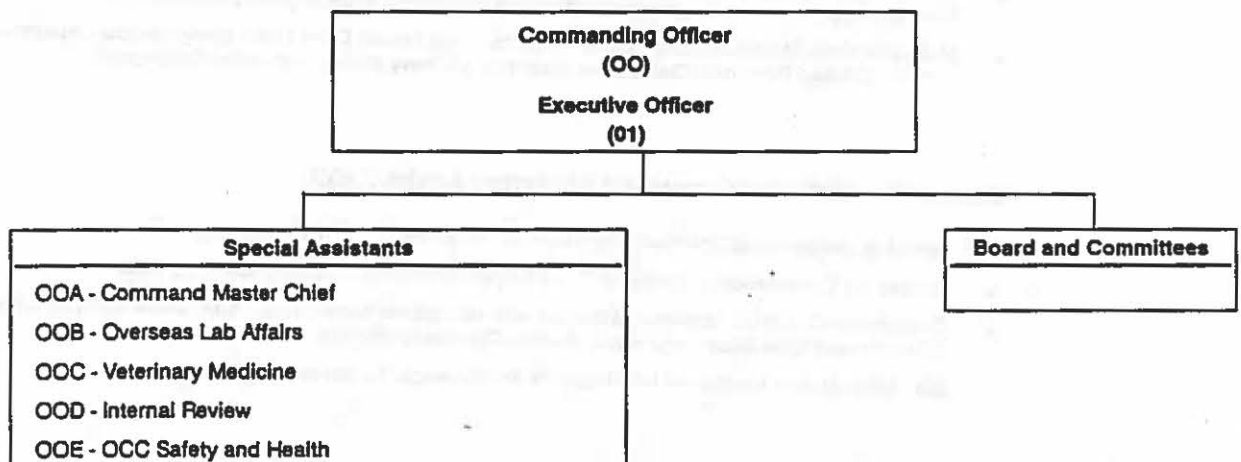
22 Nov CDR C. Schlagel attended the 1992 annual meeting of American Society of Tropical Medicine and Hygiene, Seattle, WA.

30 Nov CDR J. Beddard conducted program and fiscal review of Naval Medical Research Institute Toxicology DET.

## NAVAL MEDICAL RESEARCH AND DEVELOPMENT COMMAND ORGANIZATION



## OFFICE OF THE COMMANDING OFFICER



The Office of the Commanding Officer includes the Commanding Officer, the Executive Officer, Special Assistants and support personnel.

## **The Commanding Officer (00)**

The Commanding Officer is tasked with the responsibility for effective and economical organization and management of Medical Department research, development, test and evaluation (RDT&E) programs. The Commanding Officer has authority to fulfill the duties and obligations prescribed in current manuals, orders, regulations and directives. The Commanding Officer, at his discretion, and when not contrary to existing laws or regulations, may delegate authority to subordinates to execute assigned tasks. This delegation of authority will in no way relieve the Commanding Officer of the responsibility for the safety, well-being and effectiveness of the Command.

In the temporary absence of the Commanding Officer, the Executive Officer will act as the Commanding Officer. In the temporary absence of both the Commanding Officer and the Executive Officer, the Navy Medical Department officer next in rank and seniority, who is permanently assigned to the Command, will act as the Commanding Officer.

## **The Executive Officer (01)**

The primary function of the Executive Officer is to assist and advise the Commanding Officer in all matters that pertain to the mission of the Command. All orders issued by the Executive Officer shall be regarded as proceeding from the Commanding Officer and shall govern all persons within the Command.

## **Special Assistants to the Commanding Officer**

### **Command Master Chief (OOA)**

- Assists and advises the Commanding Officer on all enlisted personnel matters.
- Assists and advises Echelon IV Commanding Officers and Echelon V Officers-in-Charge on enlisted personnel matters with emphasis on enlisted personnel development, distribution and utilization throughout the spectrum of RDT&E mission execution.
- Coordinates with Command Master/ Senior Chiefs of the Echelon IV and Echelon V activities to ensure that morale, personnel services, and welfare are maintained at the highest possible level.
- Maintains close liaison and coordination with the Force Master Chief of the Navy Medical Department and with the Enlisted Personnel Distribution Branch of the Navy Military Personnel Command.

### **Special Assistant for Overseas Laboratory Affairs (OOB)**

- Serves as the principal Command point-of-contact for OCONUS field activities.
- Advises the Commanding Officer on OCONUS administrative and programmatic issues.
- Coordinates OCONUS laboratory activities with appropriate State Department, Department of Defense, Chief of Naval Operations, and Naval Medical Command officials.
- Is a collateral duty function of the Research Area Manager for Infectious Diseases.

### **Special Assistant for Veterinary Medicine (OOC)**

- Assists and advises the Commanding Officer on veterinary medicine and animal care and use matters.
- Assists and advises Echelon IV Commanding Officers and Echelon V Officers-in-Charge on effective animal care and use programs.
- Conducts Command inspection visits to ascertain compliance with all Federal, DoD, and Navy animal care and use regulations and guidelines.
- Maintains liaison with Office of the Chief, U.S. Army Veterinary Corps to achieve adequate veterinary personnel staffing.



### **Special Assistant for Internal Review (OOD)**

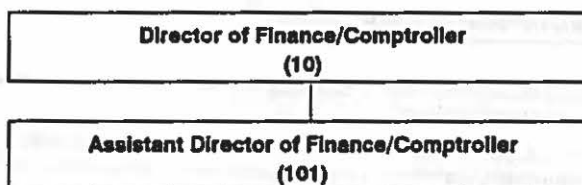
- Manages and directs the Internal Review and Internal Control Programs of the headquarters Command and field activities, and provides advice and assistance to the Commanding Officer on all matters pertaining to those programs.
- Conducts internal reviews on programs/functions with potential for waste, fraud, and abuse.
- Evaluates the effectiveness of field activity Internal Control and Internal Review Programs, develops recommendations in response to noted program deficiencies and ensures that corrective action is implemented consistent with the intent of stated recommendations.
- Coordinates and tracks field activity responses to Command Inspection Team recommendations and monitors compliance with all external review and inspection processes of NMRDC field activities.
- Advises Echelon IV Commanding Officers and Echelon V Officers-in-Charge on matters pertaining to the Internal Review and Internal Control Programs.

### **Special Assistant for Occupational Safety and Health (OOE)**

- Advises the Commanding Officer in his oversight responsibilities to ensure that Echelon IV and V laboratories officially comply with Navy Occupational Safety and Health (NAVOSH) deficiency abatement programs.
- Advises Echelon IV Commanding Officers and Echelon V Officer-in-Charge on matters pertaining to Navy Occupational Safety and Health (NAVOSH).
- Reviews and consolidates Echelon IV and V NAVOSH reporting requirements with a focus on identifying trends for actions required in support of laboratory safety and health programs.
- Serves as the Command Safety Officer.

## **OFFICE OF THE DIRECTOR OF FINANCE/COMPTROLLER**

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### **Director of Finance/Comptroller (10)**

- Is directly accountable to the Commanding Officer for mission execution, but reports to the Executive Officer as line supervisor.
- Acts as Program Element Manager for RDT&E,N Program Element 65861, "Management Support".
- Organizes approved financial plans into fiscal programs and provides recommendations on major alternatives using financial data to enhance the program decision process and ensure maximum use of available resources.
- Prepares the Medical Department RDT&E budget by coordinating fund estimates and justifications for resources.
- Develops and maintains budgetary data acquisition and retrieval systems.
- Maintains fiscal controls based on reprogramming actions.
- Maintains liaison with organizations involved in RDT&E budget formulation and execution (i.e. Chief of Naval Operations, Office of Naval Research, and Naval Medical Command).
- Monitors field activity performance for compliance with proposed financial plans and recommends fund authorization adjustments as necessary.
- Provides the Naval Medical Command Comptroller with programming data for RDT&E projects that will become operational and affect O&M,N funding.



- Is appointed in writing as the Command Allotment Administrator.

### **Assistant Director of Finance/Comptroller (101)**

- Is directly accountable to the Commanding Officer for mission execution, but reports to the Director of Finance/Comptroller as line supervisor.
- Coordinates and analyzes program planning documents from higher authority.
- Assembles medical RDT&E planning data and submits required FYDP Input.
- Translates approved programs into a financial plan and formulates annual supplemental and special budget estimates for submission by the Commanding Officer.
- Prepares budget estimates, special exhibits and justification material in accordance with guidelines issued by higher authority.
- Requests estimates of fiscal requirements from field activities and program managers and reviews and analyzes their responses.
- Maintains status of funds control in the budgetary execution process.
- Assumes the duties and responsibilities of the Director when the Director is absent from the Command. When acting in this capacity, the Assistant shall have full authority to function on behalf of the Director in all financial matters.
- Supervises personnel assigned to the Accounting Division (102).

## **OFFICE OF THE DIRECTOR OF MANPOWER/PERSONNEL**

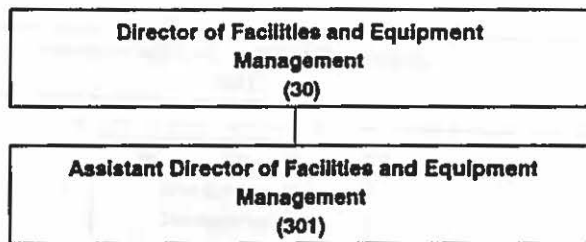
<p align="center"><b>Director of Manpower/Personnel</b> (20)</p>
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### **Director of Manpower/Personnel (201)**

- Is directly accountable to the Commanding Officer for mission execution, but reports to the Executive Officer as line supervisor.
- Advises the Commanding Officer and Echelon IV and V activities on policies and procedures that govern the assignment, distribution and utilization of officer, enlisted, and civilian personnel.
- Maintains liaison and close coordination with the Naval Military Personnel Command and Naval Medical Command on matters which affect the assignment and distribution of officer and enlisted personnel.
- In coordination with the Director of Finance, implements and monitors Managing to Payroll policy throughout NAVMEDRSCHDEVCOM.
- Proposes policy on civilian personnel development, recruitment, utilization, promotion, position classification, training, incentive awards, and time and attendance.
- Evaluates field activity position Management Programs and develops recommendations to improve their position management performance.
- Manages the Command mobilization planning and contingency readiness program, reviewing all documents from field activities, and responding to requirements of higher authority as necessary.

## **OFFICE OF THE DIRECTOR OF FACILITIES AND EQUIPMENT MANAGEMENT**

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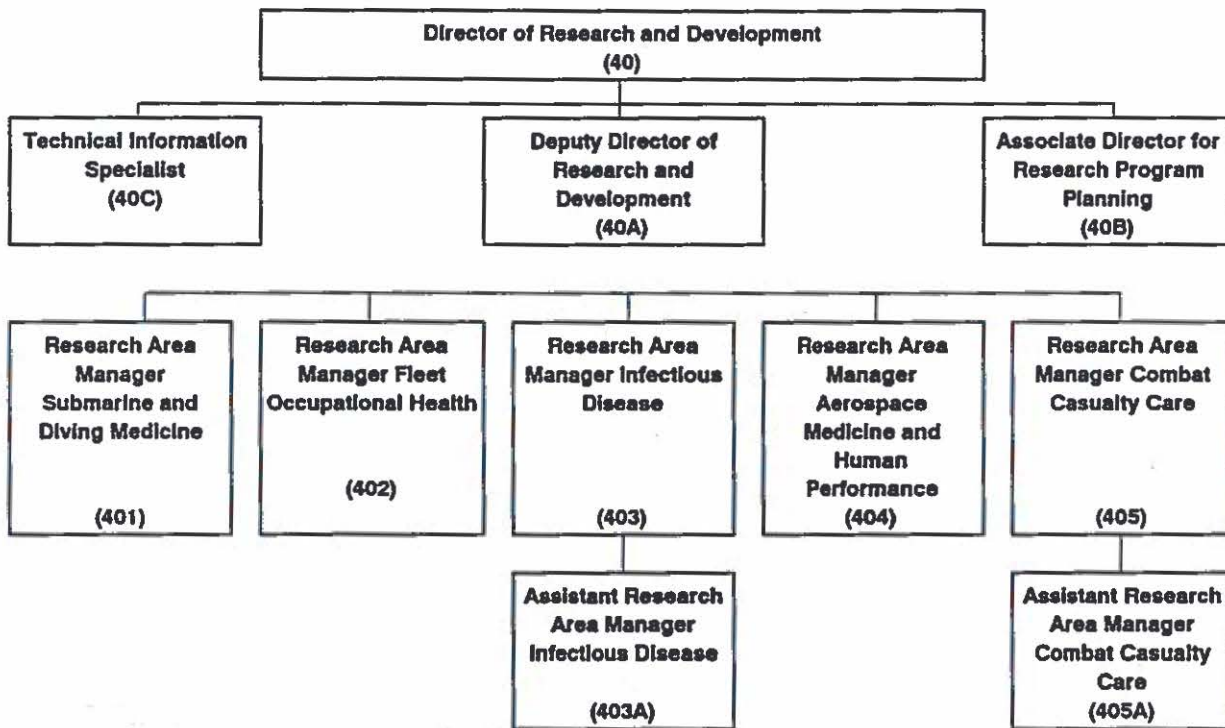
### **Director of Facilities and Equipment Management (30)**

- Is directly accountable to the Commanding Officer for mission execution, but reports to the Executive Officer as line supervisor.
- Acts as Program Element Manager for RDT&E,N Program Element 65862N, Project M0105, "Navy Medical Instrumentation and Material Support".
- Manager of facilities planning, programming, and budgeting for NMRDC and subordinate activities. Monitor of program execution for Military Construction (MILCON), Facilities Special Projects and the Shore Facilities Planning System.
- Liaison with NMCNCR Public works Division for NDWDC required alteration, construction, or repair special projects, excluding routine repair and maintenance trouble calls.
- Assists the Administrative Officer with NMRDC space assignments and any facility alterations and utility service changes.
- Manager of general purpose equipment planning, programming, and budgeting for NMRDC and subordinate activities. Monitor of program execution of equipment procurement, utilization, and redistribution. Justifies and initiates procurement of general purpose equipment for NMRDC.
- Manager of the Information Systems Program for NMRDC and subordinate activities and serves as liaison with Naval Medical Data Services Center for RDT&E ADP matters. Serves as the Executive Agent for NMRDC Information Systems Policy Board, the NMRDC ADP Security Officer and the manager of in-house ADP assets.

### **Assistant Director of Facilities and Equipment Management (301)**

- Is directly accountable to the Commanding Officer for mission execution, but reports to the Director of Facilities and Equipment Management as line supervisor.
- Assists the Director of Facilities and Equipment Management in the management and oversight of facilities, equipment, and information systems, with primary emphasis on facilities planning.
- Assumes the duties and responsibilities of the Director when the Director is absent from the Command. When acting in this capacity, the Assistant shall have full authority to function in behalf of the director in all facilities, equipment, and information system matters.

## OFFICE OF THE DIRECTOR OF RESEARCH AND DEVELOPMENT



### Director of Research and Development (40)

- Is directly accountable to the Commanding Officer for mission execution, but reports to the Executive Officer as line supervisor.
- As the principal scientific advisor to the Commanding Officer, directs the development, management, evaluation and documentation of in-house and contract RDT&E programs in response to identified Navy and Marine Corps needs and requirements. Formulates budgets for Research, Exploratory Development, Advanced Development and Engineering Development programs.
- Exercises research program quality control and assures responsiveness to RDT&E needs through the establishment, management, and support of review panels and technical workshops.
- Directs the preparation of briefing material and program documentation required by higher authority.
- Initiates and maintains scientific liaison and coordination with other governmental and non-governmental organizations with the purpose of achieving program coordination, avoiding duplication and exploiting existing R&D capabilities to meet Navy needs.
- Reviews and approves in-house and contract RDT&E proposals.
- Develops scientific and technical instructions and guidelines for in-house and contract research and development.
- Acts as the Scientific Program Element Manager for all RDT&E 6.1 through 6.4 assigned Program Elements.
- Prepares responses to Congressional inquiries and DOD-organized apportionment issues on research program content and funding levels.
- Formulates scientific and technical management recommendations for the Commanding Officer.

### **Deputy Director of Research and Development (40A)**

- Is directly accountable to the Commanding Officer for mission execution, but reports to the Director of Research and Development as line supervisor.
- Prepares annual inputs to the Program Objectives Memorandum process.
- Develops annual Command program and fiscal guidance.
- Reviews all in-house and contract RDT&E efforts.
- Conducts oversight of the functions of Ad hoc scientific review panels.
- Serves as the Command focal point for the definition, validation and documentation of scientific program requirements.
- Assumes the duties of the Director of Research and Development in the absence of that official.

### **Associate Director for Research Program Planning (40B)**

- Is directly accountable to the Commanding Officer for mission execution, but reports to the Director of Research and Development as line supervisor.
- Conducts research program planning to ensure that Navy medical research is responsive to Navy and Marine Corps operational needs.
- As Program Element Manager of the NAVMEDRSCHDEVCOM Independent Research (IR) Program, (PE61152N) develops IR basic research initiatives, establishes IR research goals, evaluates IR research progress, and develops a resource allocation plan to ensure maximum scientific productivity of IR programs.
- Manages automated systems for current and out-year fiscal planning to ensure that fiscal resources are utilized and allocated in accordance with Navy prioritized requirements.
- Compiles and presents verbal and written statistical and narrative data on research program content, funding, plans, accomplishments at briefings, meetings, and conferences.
- Coordinates and evaluates proposals for new RDT&E projects.

### **Information Services Specialist (40C)**

- Is directly accountable to the Commanding Officer for mission execution, but reports to the Director of Research and Development as line supervisor.
- Manages and monitors the scientific and technical information resources of the Command.
- Conducts literature searches, locates technical publications, and provides information gathering services as required by the staff.

### **Office of the Submarine and Diving Medicine Research Area Manager**

#### **Research Area Manager, Submarine and Diving Medicine (401)**

- Is directly accountable to the Commanding Officer for mission execution, but reports to the Director of Research and Development as line supervisor.
- Coordinates the planning and Administration of research and development efforts that involve the unique medical aspects of submarine and diving operations in support of specific underwater operational goals.
- Coordinates the medical RDT&E diving and submarine program with Naval requirements.
- Maintains liaison with the appropriate officials of the Naval Medical Command, Chief of Naval Operations, Naval Sea Systems Command, Office of Naval Research, Office of Naval Technology, and other activities concerned with underwater technology.
- Monitors in-house and contract programs in submarine and diving medicine, and advises laboratories on requirements and priorities.



- As an appointed U.S. Navy representative, serves as an active participant in international scientific exchanges and cooperation agreements involving diving and submarine medical research and development.
- Assists the Research Area Manager for Aerospace Medicine and Human Performance in the Joint Technology Coordinating Group (22JTCG) for Human Systems Technology in the area of Environmental Physiology.

## **Office of the Fleet Occupational Health Research Area Manager**

### **Research Area Manager Fleet Occupational Health (402)**

- Is directly accountable to the Commanding Officer for mission execution, but reports to the Director of research and Development as line supervisor.
- Coordinates the planning, development, support, and administration of medical research in characterizing and evaluating occupational hazards from chemical, physical, and biological stresses in operational environments (including heat, noise, vibration, atmospheric contaminants and various forms of electromagnetic radiation, including laser produced radiation), determining human exposure limits and developing effective measures for personnel protection.
- Responsible for coordination of all phases of Navy-unique medical research in chemical warfare defense.
- Provides centralized integration and coordination of the Navy's Biological Effects of Electromagnetic Radiation Program.
- Maintains liaison with related Command research programs, appropriate Naval Medical Command operational codes, Office of the Chief of Naval Research, subordinate laboratories and other government departments and agencies.
- Monitors in-house and contract RDT&E programs for these areas and advises field activities on research requirements and priorities.
- Serves as the Navy representative to the Joint Technology Coordinating Group (JTCG) for Chemical Warfare Defense for the Armed Services Biomedical Research Evaluation and Management (ASBREM) Committee.
- Assists the Research Area Manager for Aerospace Medicine and Human Performance (NMRDC-404) in the Joint Technology Coordinating Group for Human Systems Technology in the areas of Non-ionizing Radiation Bioeffects and Chemical Toxicology.

## **Office of the Infectious Diseases Research Area Manager**

### **Research Area Manager, Infectious Diseases (403)**

- Is directly accountable to the Commanding Officer for mission execution, but reports to the Director of Research and Development as line supervisor.
- Coordinates the planning, development and administration of RDT&E directed toward the epidemiology, immunology, rapid diagnosis, treatment, vaccine development and control of infectious diseases of military importance.
- Maintains liaison with the appropriate Naval Medical Command operational codes, the Navy Environmental Health Center, the Marine Corps, the Army Medical R&D Command, the Uniformed Services University of the Health Sciences, the Office of Naval Research, the Office of Naval Technology, the Armed Forces Epidemiological Board, the Armed Forces Pest Management Board, and the National Institute of Allergy and Infectious Diseases.
- Monitors the in-house and contract infectious diseases RDT&E program and keeps performing organizations advised as to requirements and priorities.
- Serves as the Navy representative on the Joint Technology Coordinating Groups (JTCGs) for Infectious Diseases of Military Relevance, and for Medical Biological Warfare Defense for the Armed Services Biomedical Research Evaluation and Management (ASBREM) Committee to coordinate RDT&E in areas of infectious diseases and biological warfare defense.
- Serves as the Commanding Officer's Special Assistant for Overseas Laboratory Affairs as a collateral duty.



### **Assistant Research Area Manager, Infectious Diseases (403A)**

- Is directly accountable to the Commanding Officer for mission execution, but reports to the Infectious Disease Research Area Manager as line supervisor.
- Assists in the management and oversight of Infectious Diseases Research Programs.
- Assumes cognizance over Infectious Diseases Program matters when the Research Area Manager is absent from the Command. When acting in this capacity the Assistant shall have full authority to function on behalf of the Research Area Manager in all program matters.
- Serves as the Liaison Officer to the U.S. Army Medical Research and Development Command and is responsible for integrating the Navy scientific program areas where the U.S. Army serves as executive agent for the Department of Defense (Infectious Disease, biological Warfare Defense, and Combat Dentistry).

### **Office of the Aerospace Medicine and Human Performance Research Area Manager**

#### **Research Area Manager, Aerospace Medicine and Human Performance**

- Is directly accountable to the Commanding Officer for mission execution, but reports to the Director of Research and Development as line supervisor.
- Coordinates planning and administration of life science research and development on human performance effectiveness in operational systems and environments of the naval service, including: work on the measurement and prediction of human performance under operational stresses (e.g., motion, sustained operations, thermal, noise, acceleration/impact, heavy workloads, etc.) of naval systems from which to develop human factors criteria for medical selection, training, engineering, work procedures; and performance maintenance/enhancement; work on the behavioral and psychological dimensions of health and safety under operations and stressful duties of naval service from which to develop criteria for medical screening and safety standards; and biomedical/biomechanical intervention techniques to maintain and/or enhance mental and physical performance in adverse operational settings.
- Maintains technical liaison with operational codes of the Office of the CNO, Naval Medical Command, Office of Naval Research, Naval Military Personnel Command, and Naval Systems Commands, as well as those of the Departments of the Army and Air Force, and other government agencies, for matters pertaining to Aerospace Medicine and Human Performance.
- Coordinates the planning, development, and administration of RDT&E projects in the multiple fields and disciplines associated with aviation medicine and human performance.
- Monitors in-house and contract aviation medicine and human performance R&D programs and keeps performing organizations advised as to requirements and priorities.
- Serves as Navy Representatives on selected U.S. Navy, triservice, and international committees, as appointed, to coordinate R&D in the thrust areas of aviation medicine and human performance research.
- Serves as the Navy representative on the Joint Technology Coordinating Groups for Human Systems Technology for the Armed Services Biomedical Research evaluation and Management (ASBREM) Committee to coordinate joint service issues in RDT&E in the six areas of: Mechanical Forces/Biodynamics, Nonionizing Radiation Bioeffects, Personal Protective equipment Technology, Operational Medicine/Performance, Chemical Toxicology, and Environmental Physiology.

### **Office of the Combat Casualty Care Research Area Manager**

#### **Research Area Manager, Combat Casualty Care (405)**

- Is directly accountable to the Command Officer for mission execution, but reports to the Director of Research and Development as line Supervisor.
- Coordinates the planning, development and administration of RDT&E efforts directed toward improved treatments and care of casualties in combat environments.
- Monitors in-house and contract RDT&E requirements and priorities.
- Maintains liaison with the appropriate organizational codes of the Naval Medical Command, Office of Naval Research, Naval Sea Systems Command, Marine Corps, laboratories under the control of the Space and Naval Warfare Systems Command, Army Medical Research and Development Command, the Air

Force Aerospace Medical Division, National Institutes of Health and other government agencies to facilitate management and execution of research area responsibilities.

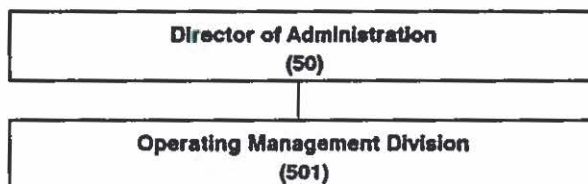
- Serves as the Navy representative on the Joint Technology Coordinating Group (JTCCG) for Combat Casualty Care for the Armed Services Biomedical Research Evaluation and Management (ASBREM) Committee to coordinate RDT&E in the thrust areas of: Burns and Trauma, Shock and Sepsis, Blood and Blood Substitutes, Combat Care in Extreme Environments, and Combat Medical material.
- Serves as an appointed U. S. Navy representative as U.S. Project Officer for Annex No. WDDBA-71-G-4209 "Blood Research" of Defense Development Exchange Program in DOD and Armed Services Blood Program Office (ASBPO).

#### **Assistant Research Area Manager, Combat Casualty Care (405A)**

- Is directly accountable to the Commanding Officer for mission execution, but reports to the Combat Casualty Care Research Area Manager as line supervisor.
- Coordinates the planning, development and administration of RDT&S efforts directed toward unproved treatment and prevention of dental disease and dental emergencies, and the care of combat casualties with maxillofacial injuries.
- Assists in the management and oversight of Combat Casualty Care Research Programs.
- Assumes cognizance over Combat Casualty Care Program matters when the Research Area Manager is absent from the Command. When acting in this capacity, the Assistant shall have full authority to function on behalf of the Research Area Manager in all program matters.

### **OFFICE OF THE DIRECTOR OF ADMINISTRATION**

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#### **Director of Administration**

- Is directly accountable to the Commanding Officer for mission execution, but reports to the Executive Officer as line supervisor.
- Serves as the principal administrative advisor to the Commanding Officer. He directs the management of the Office of the Commanding Officer; reviews and makes recommendations on all correspondence originating from the Command; maintains current information regarding laws, regulations, policies, and instructions pertaining to Naval administration; acts as Command liaison between offices of the Department of Defense, Naval Medical Command, Naval Military Personnel Command, and other agencies on matters affecting administration. Advises and assists subordinate commands in the interpretation and application of Command policy.
- Directs the Operating Management Division.
- Administers the Command Public Affairs Program and serves as the Command Public Affairs Officer.